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VASCULAR DISEASE

ASSOCIATION BETWEEN LDL AND HDL SUB-FRACTIONS WITH SUBCLINICAL ATHEROSCLEROSIS AND INFLAMMATION

ACC Poster Contributions
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Background: The purpose of this study was to assess the relationship between lipoprotein particle size and distribution and subclinical atherosclerosis as well as inflammation.

Methods: The study population consisted of 248 apparently healthy non diabetic individuals without known coronary disease (66% men, mean age: 60±14 years) participation in a prevention clinic. HDL and LDL size was assessed as a distribution of five and seven subclasses, respectively, using gradient gel electrophoresis. Subclinical atherosclerosis was determined by the presence of coronary arterial calcification by coronary CT and inflammation using hsCRP levels as per the JUPITER trial (CRP < 2 g/dl vs CRP ≥ 2 g/dl).

Results: In our study 63% (n=156) and 34% (n=84) of participants had CAC>0 and CRP ≥ 2mg/dl, respectively. In sub fraction analysis as shown in the table, small dense LDL particles (3a, 3b, 4a,) were associated with the presence of CAC but not with a higher hsCRP level. In contrast, large HDL particles (2b and 2a) were associated with a CRP < 2 but no difference was found in CAC. HDL3a was associated with a positive calcium score.

Conclusions: While small dense LDL is directly associated with plaque build-up as evidenced by a relationship with the presence of CAC, large HDL seems to exert its anti-atherogenic effects through an anti-inflammatory mechanism.

LDL and HDL Subfractions, CAC and hsCRP						
%	CAC =0 (n=92)	CAC > 0 (n=156)	P value	CRP < 2 mg/dl (n=164)	CRP ≥ 2 mg/dl (n=164)	P value
LDL 1	30 ±13	24±11	0.001	27±11	25±14	0.21
LDL 2a	22 ±7	20±6	0.05	21±6	20±7	0.30
LDL 2b	23±8	25±6	0.21	23±7	26±8	0.004
LDL 3a and 3b	19±11	23±13	0.02	21±13	21±11	0.96
LDL 4a	4±2	5±3	0.0003	5±2	4±2	0.06
HDL2b	22±9	21±9	0.31	23±9	19±8	0.0006
HDL 2a	26±4	25±4	0.2	26±3	25±5	0.03
HDL 3a	28±4	29±4	0.03	28±4	30±4	0.008
HDL 3b	18±6	19±6	0.27	17±5	20±5	0.0003